AMENDMENTS TO THE CLAIMS

Please amend Claims 1, 5, and 9 as follows, without prejudice or disclaimer to continued examination on the merits:

1. (Currently Amended) A method of testing a bit error rate for each of a plurality (N) of optical communication channels, N being greater than 2, in a wavelength division multiplexed optical communication system having N optical transmitters communicating to N optical receivers via N communication channels, the N optical receivers being co-located with each other and with the N optical transmitters for testing, the method comprising:

cascading said N optical communication channels such that an electrical output of an optical receiver i for an optical communication channel i is connected to an input of an optical transmitter i + 1 for an optical communication channel i + 1, for all values of i from one to N-l, so as to form a continuous cascade of a co-located plurality of optical transmitter/receiver pairs;

supplying a bit error rate test signal from a bit error rate tester to an input for a first optical transmitter for a first optical communication channel;

supplying the bit error rate test signal from an output of optical receiver N to the bit error rate tester;

detecting errors in the bit error rate test signal received by the bit error rate tester and calculating therefrom a measured system bit error rate;

comparing the measured system bit error rate with a predetermined system bit error rate threshold;

monitoring a signal quality for the bit error rate test signal at each of the N optical transmitters and N optical receivers in the wavelength division multiplexed optical communication system when the measured system bit error rate is greater than the predetermined system bit error rate threshold to thereby determine which of the N optical communication channels has an associated bit error rate value that is greater/less than a specified bit error rate value, ~~as determined by~~ wherein the monitoring a signal quality is associated with a performance monitor in each of the optical transmitters and each of the

optical receivers in the continuous cascade of a co-located plurality of optical transmitter/receiver pairs, wherein each performance monitor comprises an optical-to-electrical converter, a signal conditioning unit, an analog-to-digital converter, a microprocessor, a clock and data recovery unit, a decision circuit, and an error monitoring unit, and wherein each performance monitor actively monitors bit errors ~~error rate status~~ and Q by adjusting a decision level threshold provided by the microprocessor; and

identifying, with a diagnostics analyzer that analyzes a plurality of transmitter diagnostic output signals from each optical transmitter and a plurality of receiver diagnostic output signals from each optical receiver, which of the N optical communication channels has an associated bit error rate value that is greater than a specified bit error rate value, and thus is a faulty communication channel that needs correction, wherein the plurality of transmitter diagnostic output signals and the plurality of receiver diagnostic output signals each are generated by each performance monitor, ~~and~~

wherein the faulty communication channel is identified responsive to simultaneous ~~without selective interrogation and sequential~~ testing of the optical transmitters and the optical receivers; and

wherein the bit error rate test signal is provided from a single bit error rate test source and wherein the bit error rate test signal is operable to simultaneously test the N optical communication channels from the single bit error rate test source in conjunction with the performance monitor in each of the optical transmitters and each of the optical receivers and the diagnostics analyzer.

2. (Original) The method of claim 1, wherein said predetermined system bit error rate is equal to the specified bit error rate for each of N optical communication channels.

3. (Previously Presented) The method of claim 1, wherein said monitoring said signal quality includes a bit parity check.

4. (Previously Presented) The method of claim 3, wherein said monitoring includes monitoring a bit interleave parity for said bit parity check on each electrical signal in the N optical transmitter/receiver pairs.

5. (Currently Amended) A method for performing a bit error rate test for a plurality of optical communication channels of a wavelength division optical communication system having transmitters and receivers, the transmitters being co-located with each other and with the receivers for testing, comprising:

supplying a bit error rate test signal from a bit error rate tester to an input for a first optical transmitter for a first optical communication channel of said plurality of optical communication channels arranged in a continuous cascade of a co-located plurality of transmitter/receiver pairs;

receiving the bit error test signal at the bit error rate tester from a final optical receiver;

detecting a measured bit error rate and Q, wherein the detecting is associated with ~~as detected by~~ a performance monitor in each of the optical transmitters and each of the optical receivers in the continuous cascade of a co-located plurality of optical transmitter/receiver pairs, wherein each performance monitor comprises an optical-to-electrical converter, a signal conditioning unit, an analog-to-digital converter, a microprocessor, a clock and data recovery unit, a decision circuit, and an error monitoring unit, and wherein each performance monitor actively monitors bit errors ~~error rate status~~ and Q by adjusting a decision level threshold provided by the microprocessor; and

identifying, with a diagnostics analyzer that analyzes a plurality of transmitter diagnostic output signals from each optical transmitter and a plurality of receiver diagnostic output signals from each optical receiver, at least one faulty communication channel from said plurality of optical communication channels in the wavelength division optical communication system by performing a bit parity check for each transmitter/receiver pair because the measured bit error rate is greater than a predetermined system bit error rate threshold, wherein the plurality of transmitter diagnostic output signals and the plurality of receiver diagnostic output signals each are generated by each performance monitor, ~~and~~

wherein the faulty communication channel is identified without responsive to simultaneous ~~without selective interrogation and sequential~~ testing of the optical transmitters and the optical receivers; and

wherein the bit error rate test signal is provided from a single bit error rate test source and wherein the bit error rate test signal is operable to simultaneously test the plurality of optical communication channels from the single bit error rate test source in conjunction with the performance monitor in each of the optical transmitters and each of the optical receivers and the diagnostics analyzer.

6. (Previously Presented) The method of claim 5, further comprising monitoring a signal quality for the at least one faulty communication channel using an internal performance monitor.

7. (Previously Presented) The method of claim 6, wherein said internal performance monitor checks a signal transmitted through the at least one faulty communication channel.

8. (Previously Presented) The method of claim 5, further comprising passing said bit error rate test signal through said plurality of optical communication channels.

9. (Currently Amended) A system for testing optical communication channels for wavelength division multiplexed optical communication using transmitters and receivers, the transmitters being co-located with each other and the receivers for testing, comprising:

a bit error rate tester to generate a bit error rate test signal, wherein the bit error rate test signal is transmitted over a plurality of optical communication channels in a wavelength division multiplexed optical communication system arranged in a continuous cascade of a co-located plurality of optical transmitter/receiver pairs;

said tester determining a measured bit error rate, wherein said tester determines whether said measured bit error rate is greater than a predetermined bit error rate threshold for said plurality of optical communication channels;

a performance monitor in each of the optical transmitters and each of the optical receivers in the continuous cascade of a co-located plurality of optical transmitter/receiver pairs, wherein each performance monitor comprises an optical-to-electrical converter, a signal conditioning unit, an analog-to-digital converter, a microprocessor, a clock and data recovery unit, a decision circuit, and an error monitoring unit, and wherein each

performance monitor actively monitors bit errors ~~error rate status~~ and Q by adjusting a decision level threshold provided by the microprocessor; and

a diagnostic analyzer to analyze diagnostic output signals from said transmitters and said receivers and to identify at least one faulty communication channel from said optical transmitter/receiver pairs using a bit parity check because said measured bit error rate is greater than said predetermined bit error rate threshold, wherein the diagnostic output are generated by the performance monitor, and

wherein the faulty communication channel is identified responsive to simultaneous ~~without selective interrogation and sequential~~ testing of the optical transmitters and the optical receivers; and

wherein said tester comprises a single bit error rate test source operable to simultaneously test the plurality of optical communication channels in conjunction with the performance monitor in each of the optical transmitters and each of the optical receivers and the diagnostics analyzer.

10. (Previously Presented) The system of claim 9, further comprising an internal performance monitor coupled to said diagnostic analyzer.

11. (Previously Presented) The system of claim 10, wherein said internal performance monitor comprises an error monitoring unit.

12. (Previously Presented) The method of claim 1, wherein said monitoring monitors a received signal quality for the bit error rate test signal supplied by the bit error rate tester, as the bit error rate test signal is propagating from the input for the first optical transmitter to the output of the optical receiver N.

13. (Previously Presented) The method of claim 1, further comprising:

indicating that a bit error rate for each of the N optical communication channels is less than a specified bit error rate value when the measured system bit error rate is less than or equal to the predetermined system bit error rate threshold.

14. (Previously Presented) The method of claim 1, wherein the monitoring of the bit error rate test signal is performed at an input of each of the N optical transmitters and N optical receivers.

15. (Previously Presented) The method of claim 5, wherein the plurality of optical communication channels include three or more optical communication channels that are cascaded.

16. (Previously Presented) The method of claim 5, wherein the identifying at least one faulty communication channel monitors the signal quality of the bit error rate signal, as the bit error rate test signal is propagating from the input for the first optical transmitter through the continuous cascade of transmitter/receiver pairs.

17. (Previously Presented) The system of claim 9, wherein the plurality of optical communication channels includes three or more optical communication channels that are cascaded.

18. (Previously Presented) The system of claim 9, wherein the diagnostic analyzer is configured to analyze the diagnostic output signals from said transmitters and receivers in response to monitoring a signal quality of the bit error rate signal input to each of said transmitters and said receivers.

19. (Previously Presented) The system of claim 18, wherein each of said transmitters and said receivers is configured to monitor the signal quality of the bit error rate signal supplied by the bit error rate tester, as the bit error rate test signal is propagating from the input of the first optical communication channel to the final optical receiver.

20. (Previously Presented) The method of claim 1, wherein the optical transmitters and optical receivers for the N optical communication channels are co-located.

21. (Previously Presented) The method of claim 5, wherein the plurality of optical communication channels are arranged in the continuous cascade by connecting electrical outputs of optical receivers to inputs of optical transmitters in the plurality of transmitter/receiver pairs.

22. (Previously Presented) The system of claim 9, wherein the plurality of optical communication channels are arranged in the continuous cascade by connecting electrical outputs of optical receivers to inputs of optical transmitters in the plurality of transmitter/receiver pairs.